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EXAMINER	
FAROUL, FARAH	
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2616	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/775,013	SHANLEY ET AL.	
	Examiner	Art Unit	
	FARAH FAROUL	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *May 13, 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-55* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-55* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 May 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The following Office Action is based on the amendment filed on May 13, 2008, having claims 1-55 and figures 1-9.

Response to Arguments

2. Applicant's arguments with respect to claims 1-55 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-3, 6-8, 16, 27-29, 42, and 53-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saint Etienne et al. (US 7,242,683 B2) in view of Linville et al. (US 6,026,075).

For claim 1, Saint Etienne discloses receiving PDUs (column 1, lines 25-28 wherein the "useful load" is the PDUs) from multiple streams (col. 2, line 21-35, where multiple virtual links are multiplexed over a single full-duplex Ethernet link) at a first MAC client (Fig 2, element 13); encapsulating each PDU in a MAC frame which includes an identification of the stream to which the PDU belongs (col. 1, lines 25- 28, where a frame is created by encapsulating the useful load, i.e. the PDU, in an Ethernet frame, see also col. 3, lines 49-53)

Transmitting the MAC frames over an Ethernet link to a second MAC client (Fig 2, element 14) receiving the MAC frames at the second MAC client (col. 4, line 64-col. 5, line 11, where each client may transmit frames to a plurality of virtual links, such that the MAC client must receive information from multiple streams)

Decapsulating each PDU (col. 3, lines 44-52,where "putting the data together again" requires the destination equipment to decapsulate each PDU, see also col. 1, lines 25-28); and forwarding each PDU to a port buffer associated with the stream

identified in the MAC frame from which each PDU was decapsulated (col. 3, lines 44-52, where the data is made "available to the receiving application," i.e. the PDUs are forwarded to a port associated with the stream identified in the MAC frame)

For claim 1, Saint Etienne discloses the entire claimed invention except for monitoring each buffer for fullness and transmitting a Pause control frame from the second MAC client to the first MAC client, the Pause control frame indicating the fullness condition of each buffer

Linville, from the same or similar field of endeavor, teaches monitoring each buffer for fullness (column 8, lines 35-50) and transmitting a Pause control frame from the second MAC client to the first MAC client, the Pause control frame indicating the fullness condition of each buffer (column 8, lines 51-57).

Thus, it would have been obvious to one of ordinary skill in the art to combine the congestion control of Linville with the communication network of Saint Etienne at the time of the invention. The congestion control of Linville is implemented into the communication network of Saint Etienne by sending a Pause control to restrict the traffic flow into the buffers. The motivation to combine the congestion control of Linville with the communication of Saint Etienne is that it increases system throughput.

For claim 16, Saint Etienne discloses receiving MAC frames from a MAC client, each frame containing a PDU (column 1, lines 25-28 wherein the "useful load" is the PDUs) and an indication of the stream to which the PDU belongs (col. 2, lines 21-35, where the source subscriber equipment creates frames, with each frame containing a field that identifies the virtual link to which the frame belongs);

Decapsulating the PDUs (col. 3, lines 44-52, where "putting the data together again" requires the destination equipment to decapsulate each PDU, see also col. 1, lines 25-28); and storing each PDU in a buffer associated with the stream indicated in the MAC frame (col. 3, lines 44- 52, where the data is made "available to the receiving application," i.e. the PDUs are forwarded to a port associated with the stream identified in the MAC frame)

For claim 16, Saint Etienne discloses the entire claimed invention except for monitoring the fullness of each buffer and transmitting a Pause control frame to the MAC client, the Pause control frame indicating the fullness condition of each buffer

Linville, from the same or similar field of endeavor, teaches monitoring each buffer for fullness (column 8, lines 35-50) and transmitting a Pause control frame from the second MAC client to the first MAC client, the Pause control frame indicating the fullness condition of each buffer (column 8, lines 51-57).

Thus, it would have been obvious to one of ordinary skill in the art to combine the congestion control of Linville with the communication network of Saint Etienne at the time of the invention. The congestion control of Linville is implemented into the communication network of Saint Etienne by sending a Pause control to restrict the traffic flow into the buffers. The motivation to combine the congestion control of Linville with the communication of Saint Etienne is that it increases system throughput.

For claim 27, Saint Etienne discloses a first MAC client (Fig 2, element 13); a second MAC client (Fig 2, element 14) coupled to the first MAC client by the Ethernet link (col. 2, lines 21-35, where the system include at least one destination subscriber

equipment, i.e. a second MAC client, connected to the source MAC client over an Ethernet link);

The first MAC client having means for receiving PDUs from multiple streams (column 1, lines 25-28 wherein the "useful load" is the PDUs) from multiple streams (col. 2, line 21-35, where multiple virtual links are multiplexed over a single full-duplex Ethernet link); means for encapsulating each PDU in a MAC frame which includes an identification of the stream to which the PDU belongs (col. 2, lines 21-35, where the source subscriber equipment creates frames, with each frame containing a field that identifies the virtual link to which the frame belongs, and col. 1, lines 25-28, where a frame is created by encapsulating the useful load, i.e. the PDU, in an Ethernet frame); means for transmitting the MAC frames over the Ethernet link to the second MAC client (col. 4, line 64-col. 5, line 11, where each client may transmit frames to a plurality of virtual links, such that the MAC client must receive information from multiple streams);

The second MAC client having means for receiving the MAC frames transmitted by the first MAC client (col. 4, line 64-col. 5, line 11, where each client may transmit frames to a plurality of virtual links, such that the MAC client must receive information from multiple streams); means for decapsulating each PDU (col. 3, lines 44-52,where "putting the data together again" requires the destination equipment to decapsulate each PDU, see also col. 1, lines 25-28); means for forwarding each PDU to a port buffer associated with the stream identified in the MAC frame from which each PDU was decapsulated (col. 3, lines 44- 52, where the data is made "available to the receiving

application," i.e. the PDUs are forwarded to a port associated with the stream identified in the MAC frame).

For claim 27, Saint Etienne discloses the entire claimed invention except for monitoring each buffer for fullness and means for transmitting a Pause control frame to the first MAC client, the Pause control frame indicating the fullness condition of each buffer.

Linville, from the same or similar field of endeavor, teaches monitoring each buffer for fullness (column 8, lines 35-50) and transmitting a Pause control frame from the second MAC client to the first MAC client, the Pause control frame indicating the fullness condition of each buffer (column 8, lines 51-57).

Thus, it would have been obvious to one of ordinary skill in the art to combine the congestion control of Linville with the communication network of Saint Etienne at the time of the invention. The congestion control of Linville is implemented into the communication network of Saint Etienne by sending a Pause control to restrict the traffic flow into the buffers. The motivation to combine the congestion control of Linville with the communication of Saint Etienne is that it increases system throughput.

For claims 42 and 55, Saint Etienne discloses means for receiving MAC frames from a MAC client over the Ethernet link (col. 4, line 64-col. 5, line 11, where each client may transmit frames to a plurality of virtual links, such that the MAC client must receive information from multiple streams); each frame containing a PDU and an indication of the steam to which the PDU belongs column 1, lines 25-28 wherein the “useful load” is the PDUs) and an indication of the stream to which the PDU belongs (col. 2, lines 21-

35, where the source subscriber equipment creates frames, with each frame containing a field that identifies the virtual link to which the frame belongs)

A plurality of buffers, one buffer associated with the stream (col. 3, lines 44-52, where "queuing" indicates the use of buffers to reconstruct the data); means for decapsulating the PDUs (col. 3, lines 44-52, where "putting the data together again" requires the destination equipment to decapsulate each PDU, see also col. 1, lines 25-28); and storing each PDU in a buffer associated with the stream indicated in the MAC frames (col. 3, lines 44- 52, where the data is made "available to the receiving application," i.e. the PDUs are forwarded to a port associated with the stream identified in the MAC frame).

For claims 42 and 55, Saint Etienne discloses the entire claimed invention except for means for monitoring the fullness of each buffer and means for transmitting a Pause control frame to the MAC client, the Pause control frame indicating the fullness of each buffer.

Linville, from the same or similar field of endeavor, teaches monitoring each buffer for fullness (column 8, lines 35-50) and transmitting a Pause control frame from the second MAC client to the first MAC client, the Pause control frame indicating the fullness condition of each buffer (column 8, lines 51-57).

Thus, it would have been obvious to one of ordinary skill in the art to combine the congestion control of Linville with the communication network of Saint Etienne at the time of the invention. The congestion control of Linville is implemented into the communication network of Saint Etienne by sending a Pause control to restrict the traffic

flow into the buffers. The motivation to combine the congestion control of Linville with the communication of Saint Etienne is that it increases system throughput.

For claim 53, Saint Etienne discloses a first MAC client; a second MAC client coupled the first MAC client by the Ethernet link (col. 2, lines 21-35, where the system include at least one destination subscriber equipment, i.e. a second MAC client, connected to the source MAC client over an Ethernet link);

The first MAC client (Fig 2, element 13) having at least one buffer coupled to a source of PDUs from multiple streams; an addressing and scheduling module coupled to the at least one buffer, the addressing and scheduling module encapsulating each PDU in a MAC frame which includes an identification of the stream to which the PDU belongs (col. 2, lines 21-35, where the source subscriber equipment creates frames, with each frame containing a field that identifies the virtual link to which the frame belongs, and col. 1, lines 25-28, where a frame is created by encapsulating the useful load, i.e. the PDU, in an Ethernet frame); a MAC transmitter coupled to the addressing and scheduling block and to the Ethernet link, the MAC transmitter transmitting the MAC frames over the Ethernet link to the second MAC client (col. 4, line 64-col. 5, line 11, where each client may transmit frames to a plurality of virtual links, such that the MAC client must receive information from multiple streams);

The second MAC client (Fig 2, element 14) having a MAC receiver coupled the Ethernet link, the MAC receiver receiving the MAC frames transmitted by the first MAC client (col. 4, line 64-col. 5, line 11, where each client may transmit frames to a plurality of virtual links, such that the MAC client must receive information from multiple

streams); a receiving addressing module coupled to the MAC receiver, the receive addressing module decapsulating each PDU (col. 3, lines 44-52, where "putting the data together again" requires the destination equipment to decapsulate each PDU, see also col. 1, lines 25-28);

A plurality of port buffers coupled the receive addressing module, each port buffer being associated with the stream identified in the MAC frame from which each PDU was decapsulated (col. 3, lines 44- 52, where the data is made "available to the receiving application," i.e. the PDUs are forwarded to a port associated with the stream identified in the MAC frame).

For claim 53, Saint Etienne discloses the entire claimed invention except for a congestion monitor coupled to the port buffers, the congestion monitor monitoring each buffer for fullness and a downstream MAC transmitter coupled to the congestion monitor, the downstream MAC transmitter transmitting a Pause control frame indicating the fullness condition of each buffer

Linville, from the same or similar field of endeavor, teaches monitoring each buffer for fullness (column 8, lines 35-50) and transmitting a Pause control frame from the second MAC client to the first MAC client, the Pause control frame indicating the fullness condition of each buffer (column 8, lines 51-57).

Thus, it would have been obvious to one of ordinary skill in the art to combine the congestion control of Linville with the communication network of Saint Etienne at the time of the invention. The congestion control of Linville is implemented into the communication network of Saint Etienne by sending a Pause control to restrict the traffic

flow into the buffers. The motivation to combine the congestion control of Linville with the communication of Saint Etienne is that it increases system throughput.

For claims 2, 28 and 54, Linville discloses controlling the flow of signal streams by temporarily halting the transmission of PDUs belonging to streams associated with buffers which are indicated as congested by the Pause control frame (column 10, lines 13-15).

For claims 3 and 29, Saint Etienne discloses each MAC frame includes a pre-pended address field which identifies the stream with which the encapsulated PDU is associated (col. 2, lines 21-35, where the source subscriber equipment creates frames, with each frame containing a field that identifies the virtual link to which the frame belongs)

4. Claims 6-8, 10-15, 17-19, 21-26, 32-34, 36-39, 40-41, 43-45, 47-49, and 50-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saint Etienne et al. (US 7,242,683 B2) in view of Linville et al. (US 6,026,075) as applied to claims 1, 16, 27, 42, 53 above, and further in view of Unitt et al. (US 2004/0028405 A1).

For claims 6-7, 17-18, 32-33, and 43-44, Saint Etienne discloses the entire claimed invention except for each buffer indicates the fullness condition of the associated buffer using a single bit identifier and each single bit identifies a Xon/Xoff condition.

For claims 6-7, 17-18, 32-33, and 43-44, Unitt discloses each buffer indicates the fullness condition of the associated buffer using a single bit identifier and each single bit identifies a Xon/Xoff condition (paragraphs 131-132).

Thus, it would have been obvious to one skilled in the art to use a single bit identifier as taught by Unitt in the modified system of Saint Etienne and Linville to indicate the fullness of the buffer. The motivation to combine the flow control method of Unitt with the modified system of Saint Etienne and Linville to reduce system congestion and increase throughput.

For claims 8, 19, 34 and 45, Saint Etienne and Linville and Unitt do not explicitly disclose the Pause control frame includes a two bit identifier for each buffer indicating the fullness condition of the associated buffer. However, Saint Etienne and Linville and Unitt disclose a single bit identifier to indicate fullness of the buffer and the single bit identifier identifies a Xon/Xoff condition. It is generally considered to be within the ordinary skill in the art to adjust, vary, select or optimize the numerical parameters or values of any system absent a showing of criticality in a particular recited value. Since Saint Etienne and Linville and Unitt disclose the use of an identification, it would have been obvious to one of ordinary skill in the art at the time of the invention to have the length of this identification be any size, including two bytes, absent a showing of criticality by Applicant.

For claims 10-11, 21-22, 36-37 and 47-48, Unitt discloses the Pause control frame includes a Pause timer value, the Pause timer value is set to zero when the Pause control frame indicates that no buffer is experiencing congestion (paragraph 88

wherein the Pause control frame includes a timer value which may be set to zero if there is no congestion and traffic would not need to be halted for a certain period of time).

For claims 12, 23, 38 and 49, Linville discloses the Pause timer value is set to a pre-programmed Pause Time Value when the Pause control frame indicates that at least one buffer is experiencing congestion (see Fig 2A and column 5, lines 23-25).

For claims 13, 24, 39 and 50, Unitt discloses setting a pause refresh timer each time a Pause control frame is transmitted and transmitting a Pause control frame at the expiration of the pause refresh timer if no Pause control frame was transmitted since the pause refresh timer was set (Fig 4, steps 45-46 and paragraph lines 20-25 where in a pause control frame is sent upon expiration on the refresh timer).

For claims 14-15, 25-26, 40-41 and 51-52, Unitt discloses the entire claimed invention except for setting a pause delay timer each time a Pause control frame is transmitted and transmitting a Pause control frame at the expiration of the pause delay timer if congestion conditions have changed since the last Pause control frame was transmitted, the pause delay timer is or shorter durations than the pause refresh timer (Fig 4, steps 47-48 wherein a delay timer shorter than the refresh timer is set and a pause control frame is sent upon expiration of the delay timer).

5. Claims 4-5 and 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saint Etienne et al. (US 7,242,683 B2) in view of Linville et al. (US 6,026,075) as

applied to claims 1 and 27 above, and further in view of Fite, Jr. et al. (US 6,252,888 B1).

For claims 4 and 30, Saint Etienne discloses the entire claimed invention except for the identification is mapped onto an IEEE 802.1Q VLAN tag within the MAC frame

For claims 5 and 31, Saint Etienne discloses the entire claimed invention except for the identification is an IEEE 802.1Q VLAN tag within the MAC frame which is mapped to a port

For claims 4-5, and 30-31, Saint Etienne and Linville disclose the entire claimed invention except for identification is mapped onto an IEEE 802.1Q VLAN (virtual local area network) tag within the MAC frame. Saint Etienne does disclose placing the identification of the virtual link in an Ethernet frame (col. 2, lines 32-35); however, Saint Etienne fails to disclose where this identification is placed in the frame. Fite teaches that IEEE 802.1Q is a standard in which an Ethernet frame contains a VLAN tag (Fig. 2a and col. 3, lines 47-53, see also col. 4, lines 11-20). Fite further discloses that a VLAN tag is included with each frame to identify and route the frame over a network (col. 3, lines 17-21).

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to map the identification of Saint Etienne and Linville onto an IEEE 802.1Q VLAN tag within the MAC frame, as disclosed in Fite. The motivation to combine the modified system of Saint Etienne and Linville is because the IEEE 802.1Q field is used in Ethernet frames to store information used to identify and route the frame, where the identification of Saint Etienne is similarly used to identify and route the frame.

6. Claims 9, 20, 35 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saint Etienne et al. (US 7,242,683 B2) in view of Linville et al. (US 6,026,075) as applied to claims 1, 16, 27, and 42 above, and further in view Chen (US 2003/0147347 A1).

For claims 9, 20, 35 and 46 Saint Etienne discloses each two bit identifier identifies Xon/Xoff/NoChange condition

Chen, from the same or similar field of endeavor, defines three states indicating the congestion level of the buffer associated with the streams: Xon (normal), Xoff (congested) and AllXoff (seriously congested, i.e. no change from previous state of congestion).

Thus, it would have been obvious to someone of ordinary skill in the art to combine the flow control method of Chen with the modified system of Saint Etienne and Linville at the time of the invention. The flow control of Chen is implemented into the modified system of Saint Etienne and Linville by identifying the congestion states using 2-bits of the header field. The motivation to combine the flow control of Chen with the modified system of Saint Etienne and Linville is increase network throughput by lowering congestion occurrence.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to FARAH FAROUL whose telephone number is (571)270-

1421. The examiner can normally be reached on Monday - Friday 8:00 AM - 5 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Firmin Backer can be reached on 571-272-6703. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Farah Faroul/
Examiner, Art Unit 2616